

Hazard Communication

OSHA Standard 29 CFR 1910.132-139

Employee Information and Training:

Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new physical or health hazard the employees have not previously been trained about is introduced into their work area. Information and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and material safety data sheets.

Information - Employees shall be informed of:

Any operations in their work area where hazardous chemicals are present; and,

The location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and material safety data sheets required by this section.

Training - Employee training shall include at least:

Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);

The physical and health hazards of the chemicals in the work area;

The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,

The details of the hazard communication program developed by the employer, including an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information.

Material Safety Data Sheet

May be used to comply with

OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

**U.S. Department of
Labor**

Occupational Safety and Health
Administration

(Non-Mandatory Form)

Form Approved

OMB No. 1218-0072

IDENTITY (As Used on Label and List)

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name	Emergency Telephone Number
Address (<i>Number, Street, City, State, and ZIP Code</i>)	Telephone Number for Information
	Date Prepared
	Signature of Preparer (<i>optional</i>)

Section II - Hazard Ingredients/Identity Information

[illegible]

Section III - Physical/Chemical Characteristics

Boiling Point		Specific Gravity (H ₂ O = 1)	
Vapor Pressure (mm Hg.)		Melting Point	
Vapor Density (AIR = 1)		Evaporation Rate (Butyl Acetate = 1)	
Solubility in Water			
Appearance and Odor			

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
Extinguishing Media			
Special Fire Fighting Procedures			
Unusual Fire and Explosion Hazards			

(Reproduce locally)

OSHA 174, Sept. 1985

Section V - Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable		
Incompatibility (<i>Materials to Avoid</i>)			
Hazardous Decomposition or Byproducts			
Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur		

Section VI - Health Hazard Data

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
Health Hazards (<i>Acute and Chronic</i>)			
Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
Signs and Symptoms of Exposure			
Medical Conditions Generally Aggravated by Exposure			
Emergency and First Aid Procedures			

Section VII - Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled
Waste Disposal Method
Precautions to Be taken in Handling and Storing
Other Precautions

Section VIII - Control Measures

Respiratory Protection (<i>Specify Type</i>)		
Ventilation	Local Exhaust	Special
	Mechanical (<i>General</i>)	Other
Protective Gloves		Eye Protection
Other Protective Clothing or Equipment		
Work/Hygienic Practices		

Hazard Communication

Safety Training Handout

■ What is my “right to know?”

- You have the right and need to know about what chemicals you work with, what hazards they pose how to protect yourself from them.

■ Why should I know the hazards of the chemical I work with?

- Chemicals present both physical hazards and health hazards.
- Physical hazards include dangers presented by flammable liquids, combustible liquids, compressed gases, explosives and water reactive materials.
- Hazardous chemicals can enter your body through inhalation, swallowing, contact with skin, or through the eyes, causing both short-term and long-term health hazards.
- In the case of acute/short-term health hazards, symptoms appear shortly after exposure to a high concentration. Illnesses include rashes, burns, dizziness and nausea.
- Chronic/long-term hazards are caused by repeat exposure to low concentrations of chemicals. Symptoms may not appear for years. Illnesses include sterility, cancer and damage to the central nervous system, lungs and kidneys.

■ How can I learn about hazards and protect myself?

- **Labels:** Check labels prior to use for chemical name, information on appropriate PPE, safe handling practices and proper emergency response. All containers must be labeled. Do not use materials from unlabeled containers.
- **Material Safety Data Sheets (MSDS):** Know where MSDS's are stored for the chemicals you work with and check the MSDS prior to working with any unfamiliar chemicals. MSDS's provide chemical names, company information, hazardous ingredients, physical characteristics, fire and explosion data, health hazard data, reactivity data, special precaution, PPE, safe handling and emergency response.
- **Safe use practices:** Use chemicals only as directed. Always use appropriate PPE and follow any special safe handling instructions. Never eat, drink, smoke or apply of cosmetics in area where chemicals are present.

■ What should I do in the event of an emergency?

- Report leaks, spills, suspicious odors to supervisor immediately.
- Remove potential sources of ignition.
- Evacuate area.
- Stay away until given the “all clear.”
- Refer to MSDS for specific spill and leak information.
- Know what chemical or chemicals you were working with.

■ What if I come into contact with a hazardous chemical?

- If chemicals get into your eyes, flush with running water for 15 minutes.
- If chemicals are swallowed, seek immediate medical attention.
- If chemicals contact your skin, wash thoroughly with soap and water.
- If hazardous vapors or fumes are inhaled, move immediately to fresh air.
- Report incidents to supervisor.

Hazard Communication

Safety Training Handout

Hazardous chemicals are a common part of our workplace. That's why it's important to remember how dangerous they can be.

■ Chemicals can cause serious injuries

- Skin rashes
- Burns
- Blindness
- Organ damage
- Sterility
- Brain and central nervous system damage

■ Know how to identify risks

- Read container labels
- Read Material Safety Data Sheets
- Follow all directions and instructions
- Ask questions if you don't know
- Don't open unmarked containers

■ Chemical accidents can be prevented

- Follow all work procedures
- Wear and use all required personal protective equipment
- Understand safety warnings
- Hazardous Materials Information Systems lists specific health hazards
- National Fire Protection Association identifies location where hazardous chemicals are stored
- Uniformed Laboratory Hazard Signage can further help illustrate chemical hazards using easily understood pictograph symbols

MSDS

Safety Training Handout

■ **Why are Material Safety Data Sheets important?**

- You have the right and need to know about what chemicals you work with, what hazards they pose and how to protect yourself from them.
- An MSDS can help you stay safe on the job by providing information that will help you recognize hazards; properly handle, store and dispose of materials; select appropriate PPE; and be ready to react appropriately in the event of an accident.

■ **What Should I Know After Reading an MSDS?**

- **Product name and manufacturer contact info:** Do the names on the label and the MSDS match?
- **Hazardous ingredients:** What hazardous ingredients and cancer-causing agents does it contain?
- **Exposure limits:** How long can I safely work around this product and at what concentration?
- **Physical and chemical properties:** What is the material's normal odor and appearance? Will it rise or fall in air? How easily and how quickly does it evaporate? Will it sink or float in water? At what temperatures will it freeze, boil or melt?
- **Fire fighting information and measures:** What is the material's potential for fire or explosion? What hazardous products (if any) may be given off when it burns? What should be done in the event of a fire? What recommended extinguishing media, such as fire extinguishers, should be used? What PPE should be worn? Are there any special fire-fighting procedures?
- **Stability and reactivity:** How easily will materials change into an even more hazardous substance? What conditions cause this? Can it react with other chemicals? What types of hazardous products are formed when it begins to change?
- **Health hazards:** What are the routes of entry (inhalation, ingestion, absorption)? What are the symptoms of exposure? What are the short-term and long-term health effects of exposure? Are there medical conditions that can be aggravated by exposure? How toxic is the material?
- **First aid measures:** What first aid measures should be performed in the event of overexposure? What should be avoided?
- **Handling and storage:** What storage precautions must be taken? Are there conditions, such as moisture or high temperatures, that should be avoided? What special handling is required for safe use? How do I store or dispose of the product when I am done?
- **Accidental release measures:** What should be done if a spill or leak occurs? Should the area be evacuated or sealed off? How should the spill or release be contained? What are the proper cleanup methods? What equipment can be safely used? How should I dispose of these materials?
- **Exposure controls and personal protection:** Is ventilation or process enclosure recommended? What types of personal protective equipment should be worn? What should PPE be made out of?

■ **When Should I Read the MSDS?**

- Always read the MSDS **before** working with any new chemical or when work practices involving the chemical are changed.
- Review the MSDS today if you if you can't **fully** answer any of the above questions for any of the materials you commonly work with on the job.
- Consult the MSDS whenever you have a question about any aspect of the chemicals you use.

OCCUPATIONAL NOISE EXPOSURE

OSHA Standard 1910.95

Noise, or unwanted sound, is one of the most pervasive occupational health problems. It is a by-product of many industrial processes. Sound consists of pressure changes in a medium (usually air), caused by vibration or turbulence. These pressure changes produce waves emanating away from the turbulent or vibrating source. Exposure to high levels of noise causes hearing loss and may cause other harmful health effects as well. The extent of damage depends primarily on the intensity of the noise and the duration of the exposure. Noise-induced hearing loss can be temporary or permanent. Temporary hearing loss results from short term exposures to noise, with normal hearing returning after a period of rest. Generally, prolonged exposure to high noise levels over a period of time gradually causes permanent damage.

OSHA's hearing conservation program is designed to protect workers with significant occupational noise exposures from suffering material hearing impairment even if they are subject to such noise exposures over their entire working lifetimes.

The following summarizes the required component of OSHA's hearing conservation program:

Monitoring

The hearing conservation program requires employers to monitor noise exposure levels in a manner that will accurately identify employees who are exposed to noise at or above 85 decibels (dB) averaged over 8 working hours, or an 8-hour time-weighted average (TWA.) That is, employers must monitor all employees whose noise exposure is equivalent to or greater than a noise exposure received in 8 hours where the noise level is constantly 85 dB. The exposure measurement must include all continuous, intermittent, and impulsive noise within an 80 dB to 130 dB range and must be taken during a typical work situation. This requirement is performance-oriented since it allows employers to choose the monitoring method that best suits each individual situation. Monitoring should be repeated when changes in production, process, or controls increase noise exposure. Such changes may mean that additional employees need to be monitored and/or their hearing protectors may no longer provide adequate attenuation.

Under this program, employees are entitled to observe monitoring procedures and they must be notified of the results of exposure monitoring. The method used to notify employees is left to the discretion of the employers.

Instruments used for monitoring employee exposures must be carefully checked or calibrated to ensure that the measurements are accurate. Calibration procedures are unique to specific instruments. Employers have the duty to ensure that the measuring instruments are properly calibrated. They may find it useful to follow the manufacturer's instruction to determine when and how extensively to calibrate.

Audiometric Testing

Audiometric testing not only monitors the sharpness and acuity of an employee's hearing over time, but also provides an opportunity for employers to educate employees about their hearing and the need to protect it.

The employer shall establish and maintain an audiometric testing program. The important elements of an audiometric testing program include baseline audiograms, annual audiograms, training, and followup procedures. Audiometric testing must be made available at no cost to all employees who are exposed to an action level of 85 dB or above, measured as an 8-hour TWA.

The audiometric testing program followup should indicate whether the employer's hearing conservation program is preventing hearing loss. A licensed or certified audiologist (specialist dealing with an individual having impaired hearing), an otolaryngologist (physician specializing in the diagnosis and treatment of disorders of the ear, nose, and throat), or a physician must be responsible for the program. Both professionals and trained technicians may conduct audiometric testing. The professional in charge of the program does not have to be present when a qualified technician conducts tests, however. The professional's responsibilities include overseeing the program and the work of the technicians, reviewing problem audiograms, and determining whether referral is necessary.

The employee needs a referral for further testing when test results are questionable or when problems of a medical nature are suspected. If additional testing is necessary or if the employer suspects a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors, the employee shall be referred for a clinical audiological evaluation or otological exam, as appropriate. There are two types of audiograms required in the hearing conservation program: baseline and annual audiograms.

Baseline Audiograms

The baseline audiogram is the reference audiogram against which future audiograms are compared. Baseline audiograms must be provided within 6 months of an employee's first exposure at or above an 8-hour TWA of 85 dB. An exception is the use of mobile test vans to obtain audiograms. In these instances, baseline audiograms must be completed within 1 year after an employee's first exposure to workplace noise at or above a TWA of 85 dB. Employees, however, must be fitted with, issued, and required to wear hearing protectors for any period exceeding 6 months after their first exposure until the baseline audiogram is obtained.

Baseline audiograms taken before the effective date of the hearing conservation program (April 7, 1983) are acceptable baselines if the professional supervisor determines that the audiogram is valid. Employees should not be exposed to workplace noise for 14 hours preceding the baseline test; however, appropriate hearing protectors can serve as a substitute for this requirement and can be worn during this time period.

Annual Audiograms

Annual audiograms must be conducted within 1 year of the baseline. It is important to test hearing on an annual basis to identify deterioration in hearing ability so that protective followup measures can be initiated before hearing loss progresses. Annual audiograms must be routinely compared to baseline audiograms to determine whether the audiogram is valid and to determine whether the employee has lost hearing ability--i.e., if a standard threshold shift (STS) has occurred. STS is an average shift in either ear of 10 dB or more at 2,000, 3,000, and 4,000 hertz. An averaging method of determining STS was chosen because it diminished the number of persons falsely identified as having STS and who are later shown not to have had a change in hearing ability. Additionally, the method is sensitive enough to identify meaningful shifts in hearing early on.

Audiogram Evaluation

If an STS is identified, employees must be fitted or refitted with adequate hearing protectors, shown how to use them, and required to wear them. Employees must be notified within 21 days from the time the determination is made that their audiometric test results showed an STS. Some employees with an STS may need to be referred for further testing if the professional determines that their test results are questionable or if they have an ear problem of a medical nature that is thought to be caused or aggravated by wearing hearing protectors. If the suspected medical problem is not thought to be related to wearing hearing protection, employees must be informed that they should see a physician. If subsequent audiometric tests show that the STS identified on a previous audiogram is not persistent, employees whose exposure to noise is less than a TWA of 90 dB may discontinue wearing hearing protectors.

An annual audiogram may be substituted for the original baseline audiogram if the professional supervising the program determines that the employee's STS is persistent. The original baseline audiogram, however, must be retained for the length of the employee's employment. This substitution will ensure that the same shift is not repeatedly identified. The professional also may decide to revise the baseline audiogram if an improvement in hearing occurs. This will ensure that the baseline reflects actual hearing thresholds to the extent possible. Audiometric tests must be conducted in a room meeting specific background levels and with calibrated audiometers that meet American National Standard Institute (ANSI) specifications of SC-1969.

Hearing Protectors

Hearing protectors must be available to all workers exposed to 8-hour TWA noise levels of 85 dB or above. This requirement will ensure that employees have access to protectors before they experience a loss in hearing. Hearing protectors must be worn by (1) employees for any period exceeding 6 months from the time they are first exposed to 8-hour TWA noise levels of 85 dB or above until they receive their baseline audiograms in situations where baseline audiograms are delayed because it is inconvenient for mobile test vans to visit the workplace more than once a year; (2) employees who

have incurred standard threshold shifts since these workers have demonstrated that they are susceptible to noise; and (3) employees exposed over the permissible exposure limit of 90 dB over an 8-hour TWA.

Employees should decide, with the help of a person who is trained in fitting hearing protectors, which size and type protector is most suitable for their working environment. The protector selected should be comfortable to wear and offer sufficient attenuation to prevent hearing loss.

Hearing protectors must adequately reduce the severity of the noise level for each employee's work environment. The employer must reevaluate the suitability of the employee's present protector whenever there is a change in working conditions that may cause the hearing protector being used to be inadequate. If workplace noise levels increase, employees must be given more effective protectors. The protector must reduce employee exposures to at least 90 dB and to 85 dB when an STS already has occurred in the worker's hearing. Employees must be shown how to use and care for their protectors and must be supervised on the job to ensure that they continue to wear them correctly.

Training

Employee training is very important. When workers understand the reasons for the hearing conservation programs' requirements and the need to protect their hearing, they will be better motivated to participate actively in the program and to cooperate by wearing their protectors and taking audiometric tests. Employees exposed to TWAs of 85 dB and above must be trained at least annually in the effects of noise; the purpose, advantages, and disadvantages of various types of hearing protectors; the selection, fit, and care of protectors; and the purpose and procedures of audiometric testing. The training program may be structured in any format, with different portions conducted by different individuals and at different times, as long as the required topics are covered.

Recordkeeping

Noise exposure measurement records must be kept for 2 years. Records of audiometric test results must be maintained for the duration of employment of the affected employee. Audiometric test records must include the name and job classification of the employee, the date, the examiner's name, the date of the last acoustic or exhaustive calibration, measurements of the background sound pressure levels in audiometric test rooms, and the employee's most recent noise exposure measurement.